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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,826	01/30/2001	Mark A. Plummer	970019 USA	2489

7590

08/29/2002

Rodney F. Brown
3365 Baltimore Street
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EXAMINER

GRIFFIN, WALTER DEAN

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 08/29/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/774,826

Applicant(s)

PLUMMER ET AL.

Examiner

Walter D. Griffin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The rejections under 35 U.S.C. § 112, 102, and 103 as described in paper no. 3 have been withdrawn in view of the amendment filed on June 14, 2002 and remarks contained therein.

Accordingly, arguments concerning these rejections are moot and will not be addressed.

Allowable Subject Matter

The indicated allowability of claims 15, 16, 21, and 22 is withdrawn in view of the newly discovered reference(s) to Minhas et al. (US 2002/0111524 A1). Rejections based on the newly cited reference follow.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 4, 7-17, 19-24, and 26-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Minhas et al. (US 2002/0111524 A1).

The Minhas reference discloses a process for removing sulfur from hydrocarbons. The process comprises contacting a sulfur-containing hydrocarbon such as a naphtha with one side of a membrane and selectively permeating the sulfur compounds through the membrane such that a sulfur-rich permeate fraction and a sulfur-lean retentate fraction are obtained. The sulfur compounds removed in the process include organic and inorganic sulfur compounds. Thiophenes are specifically disclosed. In the process, a sweep stream is passed on the permeate side of the membrane and the permeate is dissolved into and carried away by the sweep stream. This sweep stream is miscible with the permeate and may be methanol. This methanol falls within the class of alcohol decoupling agents claimed. The membrane can include a transport agent such as an alcohol. Also, the transport agent may comprise the sweep stream. Membranes used in the process include polysulfones and polyamides. The permeate stream-sweep stream mixture that results from the process may be separated by distillation to recover the sweep stream and to recover the sulfur-rich permeate. This sulfur-rich permeate may be hydrotreated to reduce its sulfur content. See paragraphs [0013] through [0023], [0027], [0029], [0032], [0033], [0037] through [0042], [0044], [0046], [0049], [0050], and [0054].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 3, 5, 6, 18, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minhas et al. (US 2002/0111524 A1).

The Minhas reference discloses a process for removing sulfur from hydrocarbons. The process comprises contacting a sulfur-containing hydrocarbon such as a naphtha with one side of a membrane and selectively permeating the sulfur compounds through the membrane such that a sulfur-rich permeate fraction and a sulfur-lean retentate fraction are obtained. The sulfur compounds removed in the process include organic and inorganic sulfur compounds. Thiophenes are specifically disclosed. In the process, a sweep stream is passed on the permeate side of the membrane and the permeate is dissolved into and carried away by the sweep stream. This sweep stream is miscible with the permeate and may be methanol. This methanol falls within the class of alcohol decoupling agents claimed. The membrane can include a transport agent such as an alcohol. Also, the transport agent may comprise the sweep stream. Membranes used in the

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process include polysulfones and polyamides. The permeate stream-sweep stream mixture that results from the process may be separated by distillation to recover the sweep stream and to recover the sulfur-rich permeate. This sulfur-rich permeate may be hydrotreated to reduce its sulfur content. See paragraphs [0013] through [0023], [0027], [0029], [0032], [0033], [0037] through [0042], [0044], [0046], [0049], [0050], and [0054].

The Minhas reference does not disclose a hydrocarbon sweep stream, does not disclose the claimed weight ratio of sweep stream to feed stream, does not disclose recycling the sweep stream, and does not disclose hydrogenating the sulfur-enriched stream before separating the permeate from the sweep stream.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Minhas stream by using a hydrocarbon sweep stream any stream that has affinity for and is miscible with the permeated components would be effective. Since hydrocarbons meet these requirements, one having ordinary skill in the art would use a hydrocarbon sweep stream with the expectation that it would be effective in the disclosed process.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Minhas by utilizing the claimed weight ratio of sweep stream to feed stream because determination of appropriate conditions is well within the capabilities of one skilled in the art. Therefore, one would adjust this ratio in order to obtain the best results.

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It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Minhas by recycling a recovered sweep stream because the economics of the process would be improved.

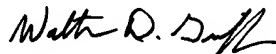
It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Minhas by hydrotreating the combined permeate/sweep stream because the sulfur content will be equivalently reduced as compared to hydrotreatment of the permeate after its separation from the sweep stream.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is 703-305-3774. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.


Walter D. Griffin
Primary Examiner
Art Unit 1764

WG
August 23, 2002